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Pihlajarinne, Taina

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Repairing and re-using from an exclusive rights perspective – towards sustainable lifespan as part of a new normal?

Taina Pihlajarinne

1. Introduction

Many environmental problems are associated with increased consumption of products, especially those with a short lifespan. From a sustainability standpoint, repairing and utilising recycled products as material for new products results in energy savings and reduction of waste, and should therefore be promoted.[1] Technological advances, such as 3D printing, might create new possibilities for repairing activities.[2] However, right holders frequently have business strategies that create incentives for invoking patent or trademark rights to restrict recycling that they deem unwelcome. Problems might emerge in secondary markets as well as in markets for products beyond those offered by intellectual property owners.

Since mass products are often delivered over vast geographical areas, the only realistic way to promote their circulation is to open markets for repair services and other recycling activities. There are several problems in this context. For instance, patenting tools and methods for re-utilisation of materials might be problematic in this respect. Exclusive rights targeted at spare parts might restrict offering them.[3] In addition, for instance, a secondary market actor might need to use another´s trademark to indicate compatibility with the main product or the fact that it provides a repair service targeting products originating from a trademark holder.[4] Some of

[1] On those impacts in detail, see B Liu 'Towards a Patent Exhaustion Regime for Sustainable Development', 32 Berkeley J Int'l L (2014) 330, 336–337. In addition to environmental impact, repair activities may promote general knowledge of technology in developing countries and thus social sustainability. Liu 2014, 334–335.

[2] If a 3D printer can use material suitable for making a spare part, it is possible to print perfect copies of spare parts by 3D printers. In that case, the problem of making or repairing in patent law might become even more relevant if 3D printers become the mainstream technique used by households. See, eg, M Norrgård, RM Ballardini and MM Kasi 'Intellectual Property Rights in the Era of 3D Printing' in (eds) RM Ballardini, M Norrgård, J Partanen: *3D Printing, Intellectual Property and Innovation*. Kluwer Law International 2017, 63, 69.

[3] For instance, in a Norwegian case Court of Appeal's decision Apple v. Huseby 21.06.2019 the Court of Appeal concluded that it was a trademark infringement to import mobile screens intended to be used as spare parts. The spare parts contained Apple´s logos, but the logos were covered by ink. The appeal is pending in the Supreme Court of Norway. The essential questions in the case seems to relate to the assessment of whether this kind of use is considered to be detrimental to the origin function or investment function of a trademark. In this context, one important issue is how permanently the removal of a trademark has been made and how feasible it is to assume that the trademark would be visibly used later.

[4] The Trademark Directive (Art 14 1c) provides a limitation for using a trademark to indicate the intended purpose of goods or services. See, eg, CJEU case *The Gillette Company, Gillette Group Finland Oy v LA-Laboratories Ltd Oy* C-228/03. Even though this situation falls beyond the scope of this Chapter, the interests are to some extent similar: it is a question of access to spare parts markets connected to the circular economy on

the problems relating to spare parts can be addressed by using competition law mechanisms.[5] In addition, end-user licence agreements (EULAs) can be used by IPR holders in software industries to restrain repair activities by non-authorized repairers, and the legal status of EULAs remains unclear.[6]

This Chapter examines utilisation of recycled materials from European patent and trademark law perspectives. Due to the wide scope of the theme, the assessment is not comprehensive. Instead, it focuses on two examples demonstrating a strong property right impact on recycling efforts. The first is the consideration of normal lifespan in the repair or reconstruction dichotomy in the patent context, and the second a possibility to utilise trademarks in so called upcycling[7] activities. The chapter assesses the structures and interpretations of exclusive rights conferred by patent law and trademark law as impediments for the circular economy in achieving its full potential in terms of repairing products or re-using materials. When considering repairing activities and how IPRs might impede them, the doctrine of exhaustion is the most essential.[8] While contractual mechanisms, such as EULAs, might also have significant importance for possibilities as to repairing activities, they fall beyond the scope of this Chapter.

A fundamental structural problem is that a repair business must resort to exceptions and limitations, such as the doctrine of exhaustion. Instead of integrating sustainability only to exceptions and limitations, revisiting exclusive rights themselves might be needed to incorporate sustainability comprehensively in IPRs.

2. Circular economy, sustainability and IPRs

The concept of 'sustainable development' originates from the Report of the World Commission on Environment and Development (WCED) of 1987, where it was defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. Since then, the concept has been widely used.[9]

Sustainability is usually defined through interconnected pillars that include environmental, economic and social issues. These pillars represent a wide range of issues, for instance the environmental pillar refers to protection of environmental resources for present and future generations.[10] Environmental sustainability is also defined as the social foundation for

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the one hand, and trademark holders' interest in preventing confusion of origin and free-riding on the signs' goodwill on the other hand.

[5] Refusal to supply spare parts can, in certain situations, be considered as abuse of a dominant position. See, eg, Judgment of the General Court in *CEAHR v. European Commission*, T-712/14. Additional sector-specific mechanisms concerning supply of spare parts include, eg, the Automotive Block Exemption Regulation (EU) No 461/2010.

[6] On EULAs as impediments for repair activities both from the European and US perspectives, see S Svensson, L Richter, E Maitre-Ekern, T Pihlajarinne, M Aline and C Dalhammar, 'The Emerging "Right to Repair" legislation in the EU and the U.S.', Conference paper for the Going Green - Care Innovation 2018.

[7] On definition of upcycling, see p. X.

[8] Previous research supports this assumption: eg, Liu concludes that 'the current exhaustion doctrine, when applied to the refurbishing industry, fails to balance its mandate of promoting technological progress with the broader program of sustainable development and is therefore unsuitable for countries on the modernization path'. Liu 2014, 332.

[9] In the WCED, it was also stated that sustainable development is 'the process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony'. See D McGoldrick 'Sustainable development and human rights: an integrated conception', ICLQ 1996, 45(4), 796, 796.

[10] E Rodrigues, *The General Exception Clauses of the TRIPS Agreement. Promoting Sustainable Development*. CUP 2012, 1–2.

humanity within 'planetary boundaries'.[11] Two of them – climate change and biosphere integrity – could be described as being core planetary boundaries which the circular economy might have great potential to affect. Moreover, a division has recently arisen between 'weak' and 'strong' sustainability. Weak sustainability brings environmental concerns into existing business structures and systems, while strong sustainability aims at integrating business into environmental systems by challenging existing structures so that industrial activities would fit within the capacity of the planet.[12]

Sustainability as a policy or legal principle[13] has connections to fundamental rights and human rights. Although direct mentions of sustainability or environmental issues in international human rights instruments are relatively infrequent, there has been a gradual development where sustainability has gained a position in human rights discussion and the issue of a 'human right to the environment' has been discussed.[14]

A provision on sustainable development appears in the Treaty on the Functioning of the European Union (TFEU). According to Article 3(3) TFEU, the EU shall work for the sustainable development of Europe, which specifically includes a high level of protection and improvement of the quality of the environment. Article 11 of the TFEU states that environmental protection requirements must be integrated into the definition and implementation of Union policies and activities, in particular with a view to promoting sustainable development. The Charter of Fundamental Rights (Article 37) includes a similar provision: 'A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.' This provision requires promotion of environmental protection in EU policies. In addition, EU law should be interpreted by taking into consideration the environmental objectives of the TFEU 11 beyond issues that are directly environmental.[15] Hence, the environmental integration obligation is not only one of the oldest integration clauses in EU law, but also holds enormous potential as a means of steering the interpretation and application of EU legal instruments that – in one way or the other – affect the environment. This objective must be balanced with protection of property and intellectual

[11] See, eg, J Rockström, 'Planetary Boundaries: exploring the safe operating space for humanity', Ecology and Society 14/2009, and B Sjåfjell, J Mähönen, A Johnston, J Cullen: *Obstacles to Sustainable Global Business. Towards EU Policy Coherence for Sustainable Development*. SMART Project, 2018, 16-18 (On file with the authors).

[12] N Roome, 'Looking Back, Thinking Forward: Distinguishing Between Weak and Strong Sustainability'. *The Oxford Handbook of Business and the Natural Environment* 2012 (Online book)

[13] See C Voigt, 'Article 11 TFEU in the light of the principle of sustainable development in international law', in B Sjåfjell, A Wiesbrock (eds): *The Greening of European Business under EU law. Taking Article 11 TFEU Seriously.* Routledge 2014.

[14] Eg, the Rio Declaration (1992) states that human beings are at the centre of concerns for sustainable development and they have a right to a healthy and productive life in harmony with nature. That standpoint was affirmed in the Johannesburg Declaration in 2002. See more J Glazebrook, 'Human rights and the Environment' 40 (2009) Vict U Wellington L Rev 293, 294–298. Some countries, such as Switzerland, have explicitly incorporated the concept of environmental sustainable development into their constitutions. See MD Khalid, F Jalil and BM Mazlin, 'Environmental Sustainability as a Human Right', in V Mauerhofer (ed): *Legal Aspects of Sustainable Development. Horizontal and Sectorial Policy Issues*. Springer 2016, 79, 83–84, However, several issues in this regard have raised discussion. These include the individualistic nature of the human rights-based approach, which does not correspond well with the value of the environment; the uneasiness of defining the qualitative level of environment that could be guaranteed by the human rights approach and the possibility to impose obligations on individuals. See McGoldrick (n 8), 811–812.

[15] B Sjåfjell, A Wiesbrock 'The importance of Article 11 TFEU for regulating business in the EU
Securing the very basis of our existence.' In B Sjåfjell and A Wiesbrock (eds): *The Greening of European Business under EU law. Taking Article 11 TFEU Seriously*. Routledge 2014 (Online book).

property protection referred in TFEU Articles 36 and 118. In intellectual property issues, the CJEU should balance between the objectives of IPR protection and Article 11.[16] On the other hand, Member States have a duty of loyalty (TFEU Article 4.3), which means they must follow the principle of sustainable development when applying EU law.[17]

Even though sustainability must be promoted whenever possible, nevertheless both in formulation and application of EU intellectual property regulation, the relationship between IPRs and environmental sustainability is not straightforward. There are several cross points, of which for instance the role of IPRs in development, deployment and access to green technology innovations,[18] and the relationship between the circular economy and IPRs, are amongst the most relevant.

The circular economy is a term that describes a new industrial model that aims to reduce waste and optimize the use of resources. As opposed to a linear model of consumption 'take, make, waste' the aim is to 'reuse, repair, recycle, functional economy, eco-design, industrial ecology, sustainable supply and responsible consumption'.[19] The transition to the circular economy has been described as entailing four fundamental building blocks: 1) materials and product design 2) new business models 3) global reverse networks and 4) enabling conditions. It depends, however, on decisions by policymakers and on business entities introducing circularity into their business models.[20] At the same time, short-term oriented legal systems often support linear models of consumption, which are not necessarily in line with the requirements of the circular economy.[21]

The current structures of IPR systems mainly reflect a need for weighing and balancing between the aims of exclusive rights and general arguments on free competition and efficient markets but not sustainability. However, sustainability interests are often intertwined with competitive issues of the recycling industry, since competition arguments also cover competition by sustainable business models. From a broader perspective, the aim of intellectual property rights is – by encouraging innovations, creative work and reducing search costs – to foster scientific, technical and social progress, that is to say, sustainable welfare.[22]

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[16] Sjåflell uses *Concordia Bus Finland* C-513/99 as an example of cases where the court has, in a traditionally economic area, stressed the objective of environmental protection by referring to the environmental integration rule. B Sjåflell, 'The legal significance of article 11 TFEU for EU institutions and Member States'. In B Sjåfjell and A Wiesbrock (eds): *The Greening of European Business under EU law. Taking Article 11 TFEU Seriously.* Routledge 2014 (Online book).

[17] B Sjåflell 'The legal significance of article 11 TFEU for EU institutions and Member States'. In B Sjåfjell - A Wiesbrock (eds): *The Greening of European Business under EU law. Taking Article 11 TFEU Seriously.* Routledge 2014 (Online book).

[18] See, eg, M Rimmer, *Intellectual Property and Climate Change: Inventing Clean Technologies*, EE (2011) and A Brown, *Environmental Technologies, Intellectual Property and Climate Change.* EE 2013. On the interplay between climate change and IPRs, see also J Sarnoff (ed) *Research handbook on Intellectual Property and Climate Change.* EE 2016.

[19] D Gaullard and L Blandine: *Circular Economy, Industrial Ecology and Short Supply Chain: Towards Sustainable Territories.* John Wiley & Sons 2016, 1, 3–4.

[20] M Lewandowski, 'Designing the Business Models for Circular Economy—Towards the Conceptual Framework' 2016) Sustainability, 8 (2016), available at http://www.mdpi.com/2071-1050/8/1/43, 1.

[21] J Mähönen 'Financing Sustainable Market Actors in Circular Economy'. October 26, 2018. University of Oslo Faculty of Law Research Paper No 2018-28. Available at SSRN: https://ssrn.com/abstract=3273263 or http://dx.doi.org/10.2139/ssrn.3273263, 1, 1.

[22] On the patents perspective, G van Overwalle: 'Smart Innovation and inclusive patents for sustainable food and health care: Redefining the Europe 2020 objectives'. In Geiger, Christopher: *Constructing European Intellectual Property. Achievements and new Perspectives*. EE 231–254, 250.

Due to the stated objective, in some singular cases fine-tuning the system might be enough. From a strong sustainability perspective, a more fundamental change is needed to direct incentives in a way that fosters sustainability. A strong property-rights approach to intellectual property can create incentives for original manufacturers but it fails in terms of creating incentives for sustainable business models. Environmental arguments should, however, have a standalone position instead of having only indirect, implicit relevance through arguments relating to competition. In the case of having only implicit relevance, it might be difficult for sustainability arguments to override traditional strong utilitarian justifications for IPRs.[23]

Incorporating sustainability in terms of exceptions and limitations is not sufficient as such. From a perspective of implementing strong sustainability into IPR regulation, sustainability cannot have a role only in levels of exceptions and limitations, that is to say, as an exception to the main rule of IPRs as strong property rights. This is because – due to a strong property rights perspective having often been followed in Europe – new exceptions and limitations are difficult to implement, while existing ones are in many traditions interpreted narrowly. Conceiving sustainability as only an exception to strong property rights as a main rule, that is to say, seeing sustainability as a negative variable, does not enable the ambitious goals of a 'strong' sustainability approach. A balance between sustainability and IPRs as property-related arguments requires sustainability to be embedded into IPR regulation as a general principle.

2. Two examples of the negative effects of a strong property right approach on the circular economy

2.1 Repairing activities and patents – the outdated idea of 'normal' lifespan?

The rights conferred by patent are wide and these provisions do not usually provide much flexibility.[24] Therefore, repair business' activities targeted at patented products are easily considered as prima facie infringements and exhaustion as limitation turns out to be of utmost importance. The basic idea under the doctrine of exhaustion is that, once sold, a product can be used and repaired within its normal lifespan. After the first sale or, to be more precise, first marketing, the patent has fulfilled its purpose and the patentee received compensation.

In Europe, Josef Kohler developed the theory of exhaustion at the end of the 19th century. In his theory, the doctrine of exhaustion was developed out of the implied licence construction, since Kohler discussed firstly the implied licence doctrine and after that, expanded his view into a general doctrine of exhaustion which could be applied outside of the contractual

[23] However, the ultimate problem – even if sustainability were fully recognized by the IPR system – is the priority of legitimate interests. As Voigt (n 12) points out, if other interests are considered as having importance enough, interests relating to environmental protection 'can simply be "balanced away"'.

[24] Patent infringements in European countries are of two types: direct and indirect, eg, such acts as making, using, selling and importing a patented invention without permission are direct infringements. Indirect infringement refers typically to secondary liability on the basis of supplying means that relate to an essential element of a patented product to a person with the knowledge that such means will be used in an infringing product. See more detail, RM Ballardini, M Norrgård and T Minssen, 'Enforcing Patents in the Era of 3D Printing'. Journal of Intellectual Property Law & Practice, Vol 10, Issue 11, 1 November 2015, 850, 852–862. Eg, Arts 25 and 26 of the Unified Patent Court Convention include detailed and broadly formulated provisions on direct and indirect use of patent as infringements.

relationship.[25] A purchaser is allowed to use a product within its 'intended use', and repair within the 'normal lifespan of products' is also possible. [26]

The scope of exhaustion is not, however, internationally harmonised but left to the discretion of national courts instead (for instance, TRIPS Article 6). The fact that exhaustion might be national, regional and international might create barriers for repair activities.[27] Interpretations of what kind of activities constitute making a new product might differ between jurisdictions; additionally, a lack of clear rules results in lack of uniformity inside jurisdictions. Moreover, some of these practices might stand in fundamental contradiction with the modern circular economy.

The principle of exhaustion is closely linked to single market policies, since a broad interpretation of exhaustion is supported by the free movement of goods. The CJEU has stated that patent law must be compatible with those policies.[28] The Convention on the Grant of European Patents (EPO) allows an applicant to acquire a bundle of national patents by a single application, but the Convention does not include much harmonisation. Article 29 of the Agreement of the Unified Patent Court (UPC-agreement) includes a provision on exhaustion.[29] The big picture regarding exhaustion will not be changed: once products have been put in markets anywhere in the internal markets, they can subsequently be sold everywhere in the internal markets. It is possible that the details of exhaustion will be harmonized in the practice of the Unified Patent Court. However, this is only a partial solution due to the fact that defendants might still face claims for infringement of national patents.

From the circular economy perspective, the most essential feature in the exhaustion doctrine is drawing a line between repair and reconstruction. While repairing a patented product is permissible, construction of a new product is not. Claims of both direct and indirect infringements can be assessed under the exhaustion doctrine.[30] An impermissible reconstruction might constitute a direct patent infringement. In addition, sale of an unpatented replacement part can be counted as indirect infringement, as facilitating direct patent infringement.

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[25] See G Westkamp, 'Exhaustion and the internet as a distribution channel: the relationship between intellectual property and European Law in search of clarification', in I Calboli and E Lee (eds): *Research Handbook on Intellectual Property Exhaustion and Parallel Imports*. EE, 498–499 referring to J Kohler: *Deutches Patentrecht* 1878, 157–161.

[26] J Kohler, *Handbuch des deutschen Patentrechts*, available at http://dlib-pr.mpier.mpg.de/m/kleioc/0010/exec/books/%22161848%22, Mannheim 1900, 452–456.

[27] The EU applies regional exhaustion to sales in the European Economic Area. The USA applied national exhaustion before US Supreme Court decision 30.6.2017 *Impression Products Inc. v. Lexmark International* according to which foreign sales also exhaust US-based patent rights, meaning that the doctrine of international exhaustion applies. Japan and China apply international exhaustion as well.

[28] In *Merck & Co. Inc. v Stephar BV and Petrus Stephanus Exler*.C-187/80 the CJEU stressed that the 'substance of a patent right lies essentially in according the inventor an exclusive right of first placing the product on the market.' After that, the right is exhausted. The CJEU has stated that Art 36 TJEU allows exceptions to the free movement of goods only to the extent to which such exceptions are necessary for the purpose of safeguarding rights that constitute the specific subject-matter of the type of intellectual property in question. *SA CNL-SUCAL NV v HAG GF AG*. C-10/89. Therefore, first marketing can be seen as a specific subject matter. See S Enchelmaier, 'A Competition Law Perspective I: Competition Law Aspects of European Patents with Unitary Effect', in (eds) J Pila, and C Wadlow, *The Unitary EU Patent System*. Hart 2017, 111, 114–115.

[29] According to the article, there is an exhaustion of the patent after the product has been placed on the market in the EU by the patent holder, unless there are "legitimate grounds for the patent proprietor to oppose further commercialisation of the product".'

[30] On direct and indirect infringements, see n 24.

The limits between repair and reconstruction are not clear. For instance, in the UK exhaustion is partially based on an implied licence construction.[31] Exhaustion provision can be found in UK law only to the extent that it is required due to the EC Treaty. Under domestic law, the concept of an implied licence is still to some extent decisive.[32] A principal weakness from the sustainability standpoint lies in setting the recycling business dependent on the right holder's declaration of will-type acts, which might strengthen the right holder's possibilities to set conditions on subsequent utilisation of a product. In *Schutz v. Werit 20.3.2013* the Supreme Court concluded that the division between repair and reconstruction depends on various factors, for instance the life expectancy of the part and whether the part embodies the inventive concept of the patent.

In Germany, there is a tradition of stressing the 'essential element of invention' and 'inventive function'.[33] The Supreme Court has applied a test according to which the line between repair and reconstruction is drawn by assessing whether the components are such that their replacement can usually be expected during the working life of the device, that is to say, how the product's lifespan is seen in the trade. If replacement of a component can be expected, then replacement is not per se infringement, but then it must be assessed whether the technical effect of the invention is reflected in replaced components. If the answer is affirmative, then the use constitutes reconstruction and counts as a patent infringement (BGH: *Palettenbehälter II* and "*Trommeleinheit*"). As a comparison, in the USA, the main principle is that unpatented consumable parts are free to be replaced, while in Germany a broad interpretation of indirect infringement is applied – a wide interpretation of an essential element of an invention might impede secondary market actors.[34]

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[31] The situation is similar in USA. Eg, *Anton/Bauer, Inc. v. PAG, Ltd.* (Fed Cir 2003) illustrates well the position of the implied licence doctrine in connection with repair activities. See more about the case, Rovner, Amber Hatfield: 'Practical Guide to Application of (or Defense Against) Product-Based Infringement Immunities Under the Doctrines of Patent Exhaustion and Implied License' 12 Tex Intell Prop LJ 227 (2004), 248–249.

[32] Eg, in an early decision, *Solar Thomson Engineering Co. Ltd. and Another v Barton*, High Court of Justice, Civ Div, 17 March 1977, the court stressed that there was an implied licence to repair a patented product, but not for making new products. Eg, in *United Wire v Screen Repair Services* (Scotland) 2000 concerned screens for filtering machines used in oil exploration. There were patents relating to filter meshes and their frames. The defendant supplied new meshes at the correct tension. The Court of Appeal stated that genuine repair did not infringe the patent. However, although a patentee exhausted his patent rights on sale, allowing the owner to make repairs, this did not mean that the owner also had an implied licence to make a product. The court concluded that there was a patent infringement.

[33] Eg, the German Reich Supreme Court, 4 October 1938, Case No. I 233/37, *Gerbsäure*, German Reich Supreme Court; Federal Supreme Court, 12 June 1951, Case No. I ZR, *Tauchpumpensatz*, Federal Supreme Court, 10 December 1981, Case No. X ZR 70/80, *Rigg*. In the German Reich Supreme Court, 25 October 1924, Case No. I 521/23, 1926 GRUR 163 – *Schraubstöpselsicherung*, the court stated that the replaced part, a 'cartridge', was an important part of the invention and embodied the inventive function. About these cases, see M Mohri, "*Patents, repair and recycling from a comparative perspective"* IIC 2010, 41(7), 779, 791–792.

[34] See Federal Supreme Court 4 May 2004 - Case No. X ZR 48/03, *Flügelradzähler*. The case concerned a flow meter comprising housing and removable measuring capsules. The measuring capsule was intended to be replaced during the lifespan of the product. The plaintiff sold flow meters and replaceable measuring capsules. The housing part was the 'novel' part. The defendant sold measuring capsules. The court concluded that this was an indirect patent infringement of the Patent Act Section 10 since they were 'means relating to an essential element of the invention'. The court stated that means relates to an essential element of the invention if it is capable of cooperating functionally with that element in the implementation of the protected inventive concept. The defendant's measuring capsules were designed in accordance with a feature of the patented product and were suitable and intended to interact with the housing. Replacement of the part during the expected working life of a machine did not constitute a new making of the product. However, if that part embodies essential elements of the invention, the patent holder has not already drawn the technical or commercial benefits as a result of the first putting into circulation of the device as a whole. The case has been criticized as favouring patent holders, since

The first problem is that unpredictability due to lack of harmonisation both in international and European level as such is a risk for recycling activities. Secondly, the threshold of 'normal' lifespan, that a product can be used and repaired within the normal lifespan of a product involves problems. Assessment should be made on the basis of whether the product has fulfilled its function: is life at an end? The normal lifespan of a product has been assessed on the basis of 'common understanding in society',[35] but not without criticism. The concept of a normal lifespan under a common understanding in society can lead to imbalanced results since the way the public perceive a product's lifespan very much depends on the patent holder's guidance. In addition, a normal lifespan does not necessarily reflect the core interests that are aimed to be protected by IPRs. To illustrate, a sold product as the public perceive it does not necessarily correspond to the invention. For instance, both single-use or durable products can be based on the same invention.

The patent holder's way of marketing and presenting a product has an impact on how the public perceive its lifespan.[36] Potentially, a patent holder can choose to create or to not create an assumption that a product's normal lifespan includes changes of replacement parts by, for instance, selling replacement parts separately. Additionally, it is relevant what kind of implicit or explicit information they give on the lifespan of the product; for instance on its utilisation value or exchange value. From the sustainability viewpoint, right holders' possible tendency to see a product's lifespan as shorter than it could potentially be, might be problematic.

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every element of the patent claim could be an 'essential' element of the invention. Mohri 2010, 788–789. Additionally, in the Düsseldorf High Court case, 17 November 2005, *Kaffee-Filterpads*, a patent on a coffee machine consisted of a filter holder and filter pads. The court concluded that selling filter pads that were compatible with the machine was an indirect infringement, since the coffee pads were compatible with the filter holder, both of which performed an inventive function. The means of putting a new coffee pad into the machine was described in the patent specification. The court stated that the patentee had not yet capitalized on its invention by selling coffee machines that have such a combination and therefore replacing the pad was considered as a reconstruction of the patented invention. In the USA, the approach has instead been open for replacements. In *Aro Mfg. Co. v. Convertible Top Replacement Co*., 365 U.S. 336 (1961) and *Aro Mfg. Co. v. Convertible Top Replacement Co*., 377 U.S. 476 (1964) the patent holder owned a patent on a convertible top. The defendant sold fabric components that replaced portions of worn-out fabric which required replacement after three years of use. The court stated that the combination patent covered the totality of the elements in the claim, and there was no legally recognizable or protected 'essential' element, 'gist' or 'heart' of the invention in a combination patent. The court stated that a purchaser cannot reconstruct or make a totally new patented product after a product sold as a whole has become spent, but 'mere replacement of individual unpatented parts, one at a time, whether of the same parts repeatedly or different parts successively, is no more than the lawful right of the owner to repair his property'.

[35] The reasoning adopted by the German Supreme Court in BGH, 17 July 2012, X ZR 97/11 (*Palettenbehälter II*) offers a good example of such argumentation**.** The patent covered a pallet container, consisting of an inner container, flat pallets and bars of metal in the shape of a basket. The defendant sold and exchanged the inner containers in containers originally sold by the plaintiff. The court stated that in drawing the line between repair and reconstruction, it is important to assess whether the technical effect of the patented invention resides in the part exchanged. However, if consumers and trade circles believe that a replacement constitutes a remanufacture of the patented product, the action constitutes a patent infringement, in spite of the estimation of whether the replacement reflects the technical aspects of the innovation. Therefore, consumers' view on the perception of the product – the assumptions of its use value as well as exchange value – are relevant. However, the meaning of repair in common language and in the IPR context can sometimes be remarkably different. For instance, as stated in *United Fire*: 'repair' refers to remedial actions that might not involve replacement of parts or involve extensive replacement of parts. The latter might infringe the patentee's rights while the former does not.

[36] C Heath and M Mori, "Ending is better than mending - recent Japanese case law on repair, refill and recycling" International Review of Intellectual Property and Competition Law 37(7) 2006, 856 863. In addition, Heath and Mori suggest that the concept of the normal lifespan is too vague and thus creates legal uncertainty as to the markets for repair.

A third problem is that in general, traditional property right perspectives seem to guide the courts towards having a tendency to follow old traditions rather than open their argumentation for sustainability. It seems that the courts are not inclined to use arguments relating to sustainability in their interpretations of repair and reconstruction.[37] A traditional, property-rights attitude for courts is highly problematic in Europe from the perspective of Article 11 TFEU.

2.2 Upcycling: trademarks as right holder's property, badge of origin or an indicator on recycling?

From the perspective of re-utilisation of trademarked products, trademarks might serve several purposes. In some cases, a trademark is affixed to a product that is re-used and it is impossible or difficult or expensive to remove – if a trademark right prohibits its presence on the product, it constitutes a direct obstacle for recycling. A trademark as a sign might be irrelevant as such.

Secondly, a secondary market actor might have an interest in using a trademark in a product or in its package as an indication of the origin of raw material.[38] From several potential situations, the example of so called 'upcycling' (or 'trashion') cases is used here to demonstrate problems of a strong property rights approach from the trademark perspective. The concept of upcycling is used to describe creation of objects, such as bags or jewellery, objects used as home-decorative purposes from used products.[39] In these cases, beyond the markets of trademarked products, a trademark might be a key feature of a product for the consumer. With regard to a product used as raw material and a new product, the product categories and the functionality of products are, surprisingly, completely different. This is an element that makes it attractive for consumers. In these cases, a trademark serves as an indication of recycling. However, this kind of (new) function of trademarks is a reflection of the origin function of the product utilised as raw material. When a trademark has changed as a badge of recycling, the risk of confusion might be low despite the fact that the trademark might form a prominent feature of the product.[40]

In general, trademark law has on the one hand been demonstrated as being rather flexible when facing challenges such as digitalisation. This is due to flexible building blocks such as the

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[37] Similarly from perspective of USA and Japan. MS Hashiguchi, 'Recycling Efforts and Patent Rights Protection in the United States and Japan' 33 Colum J Envtl L (2008), 169, 180–185.

[38] Trademark Directive 14 1b limitation could be applied to such situations since when a trademark's purpose is to indicate the origin of raw material, it directly tells something about the goods offered, and it can be permitted if it is in accordance with honest practices in industrial or commercial matters. In Germany, the right to use a trademark indicating the origin of raw material has traditionally been assessed by paying special attention to the degree of alteration of the original product. See G Riehle, 'Trade Mark Rights and Remanufacturing in the European Community. With Special Emphasis on the Rebuilding of Automotive Parts'. Max Planck Institute for Intellectual Property, Competition and Tax Law, Munich 2003, 91–92. In the case Bundegerichtshof GRUR 1998, 687 *Venus Multi*, the German Supreme Court stated that it is irrelevant in these situations whether a raw-material's trademark has been left untouched on to the new product or re-affixed there.

[39] See, eg, A Anderson, 'Trash or Treasure? Controlling your brand in the age of upcycling' In Trademark 129/2009, Issue 129 1,1.

[40] However, right holders might be suspicious of their trademark being utilised, eg, see Anderson 2009 (n 38), 1–2 who argues the importance of reacting to this kind of use, eg, stating that in the case of a bag constructed only from cookie wrappers originating from a single trademark holder, the prominent nature of the trademark would lead a reasonable consumer to assume that the bag was produced by the trademark holder or under its supervision. However, Anderson recognises that aggression towards this kind of trademark utilisation might also result in ill-will associated with the trademark holder as the trademark holder could be seen as having little concern about the environmental impact of its products.

principle of confusion and the commercial use criterion.[41] In upcycling cases, trademark infringements under Article 10 2 a (so called double identity rule) and b (confusing similarity -rule) are not probable since the goods are typically different from the ones for which trademark is registered.[42] However, the requirements set by Article 10.2 c for protection of trade marks with a reputation could be fulfilled; among others, on the basis that the use means free-riding (use "takes unfair advantage of the distinctive character of repute" of trademark) or tarnishing the trademark's reputation (use is "detrimental to repute" of trademark).[43]

If trademark owners' interests dominate in interpretation of Articles 10.2 a-c and upcycling is deemed as being a prima facie infringement, the next step is to consider the exceptions and limitations. Exhaustion of a trademark is harmonised in the EU. There is relatively little case law from the CJEU on exhaustion in the contexts of recycling and re-using materials. However, one possible interpretation is that the exhaustion doctrine might cover only repairing a product to its original condition. It might not be applied, instead, to a recycled product bearing an original product's trademark in a case where, due to a stage of alteration, the identity of the product has turned into a new, independent product. In that case, the product is not the same as was originally put on the market, since arguably the essence of the exhaustion doctrine is to define the limits of a trademark right on a product originating from the trademark owner. If the identity of a product has essentially changed, the product originates from recycling businesses, not from the trademark owner. However, when it is applied, a trademark holder might additionally prevent further commercialisation of the product in the case of a 'legitimate reason' as meant in Article 15.2 of the Trademark Directive, "especially where the condition of the goods is changed or impaired after they have been put on the market".[44] Assessment of

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[41] See T Pihlajarinne 'Non-traditional Trademark Infringement in the 3D Printing Context', in (eds) RM Ballardini, M Norrgård and J Partanen: *3D Printing, Intellectual Property and Innovation*. 303–316, 305–308. Kluwer International 2017.

[42] However, the so called double identity rule (Article 10.2 a) which requires both trademarks and goods to be identical could be applied in such exceptional cases where a trademark proprietor is registered the mark for the same goods that are produced by used materials. It is possible that that the requirements set by CJEU would be considered to be fulfilled - for instance, that use is detrimental for the investment function of trademark. The CJEU has stressed that only use that is detrimental to the functions of a trade mark, especially to the origin function, is an infringement under the double identity rule, eg, the following judgments of the ECJ: Arsenal Football Club plc v. Reed, C-206/01; Anheuser-*Busch v. Budéjovicky Budvar*, C-245/02; *Adam Opel AG v. Autec Ag*., C-48/05. Such a use is not, however, necessary, since the CJEU has stated that use that is detrimental to the investment function could also be infringing under this rule. See cases *L´Oréal SA, Lancome parfums et beauté & Cie SNC and Laboratoire Garnier & Cie v. Bellure NV, Malaika Investments Ltd and Starion International Ltd*, C-487/07 and *Interflora Inc. Interflora British Unit v. Marks & Spencer et al.* C-323/09.

[43] The CJEU has stated that free riding refers to use where user seeks "to ride on the coat-tails of the mark with a reputation in order to benefit from the power of attraction, the reputation and the prestige of that mark and to exploit, without paying any financial compensation, the marketing effort expended by the proprietor of the mark in order to create and maintain the mark's image". The CJEU has defined tarnishing as use which reduces the trade mark's power of attraction. In particular the characteristic or quality of the goods might have negative impact on the image of the mark. *L´Oréal SA, Lancome parfums et beauté & Cie SNC and Laboratoire Garnier & Cie v. Bellure NV, Malaika Investments Ltd and Starion International Ltd, C-487/07.*

[44] This problematic was considered by the CJEU in *Viking Gas A/S v. Kosan Gas A/S*. The plaintiff sold so called composite bottles with carbon dioxide, as the holder of an exclusive licence of three-dimensional trademarks (the shape of bottles and containers for liquid fuels). A consumer purchased a bottle from plaintiff, paying for the gas as well as for the bottle. After this sale, a buyer could exchange the bottle for a new one filled by plaintiff, paying only for the gas. The defendant offered a possibility for consumers to exchange an existing composite bottle in return for a full one, affixing its name and logo thereto, adding information on gas filling stations. The name of the plaintiff was also visible. The CJEU pointed out that composite bottles to be re-used a number of times are not mere packaging of the original product but have an independent economic value and must be considered as goods. A balance must be found between the legitimate interests relating to a licensee profiting from the trademarks and the legitimate interests of purchasers of those bottles, in particular the interest in fully enjoying

whether there is substantial material alteration does not necessarily reflect the legitimate interest of trademark protection. In many upcycling cases there certainly is substantial material alteration but no risk of confusion or damaging the reputation of trademark.

In EU trademark law, the general idea of whether use harms trademark functions such as an original function or an investment function, is at the core of finding infringements and therefore is likely to be reflected in the interpretation of exhaustion.[45] The CJEU view in *Copad SA v. Christian Dior couture SA and Others*, C-59/08 indicates a rather extensive protection for brand owners from damaging the luxury image in connection with exhaustion.

However, the Trademark Directive (Article 14 1b) limitation might also be applicable in cases where, due to a stage of alteration, the end product has turned into a new, independent product.[46] In upcycling cases, one could argued that a the trademark serves as an indication of the characteristics of a good, that is to say, an indication of the origin of the raw material used. To be permitted, the use must be 'in accordance with honest practice in industrial or commercial matters.' However, the CJEU has guidelined in *Adam Opel v. Autec AG*, C-48/05 and *Adidas AG et al v. Marca Mode CV*, C-102/07 that only such use that indicates the characteristics of the products of the third party utilising a trademark falls into the scope of the limitation. A trademark as an indication must directly relate to the characteristics of the goods

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their property rights in those bottles, and the general interest in maintaining undistorted competition. The court concluded that the right holder could not prevent this without a proper reason for the purposes of Art 7(2) of Dir 89/104. Therefore, the exhaustion doctrine was applicable, but with the restrictions set by Art 7.2 of the Trademark Directive. The use of the word 'especially' in Art 7(2) of the Directive indicates that alteration or impairment of the condition of goods bearing a mark is given only as an example of what may constitute legitimate reasons. A legitimate reason also exists when use by a third party of a sign identical with, or similar to, a trademark seriously damages the reputation of that mark or when that use is carried out in such a way as to give the impression that there is a commercial connection between the trademark proprietor and that third party, and in particular that the third party is affiliated to the proprietor's distribution network or that there is a special relationship between those two persons. The labelling of the composite bottles and the circumstances in which they are exchanged must not lead the average consumer who is reasonably well informed and reasonably observant and circumspect to consider that there is a connection between the two undertakings at issue in the main proceedings or that the gas used to refill those bottles comes from Kosan Gas. In order to assess whether such an erroneous impression is precluded, it is necessary to take into account the practices in that sector and, in particular, whether consumers are accustomed to gas being filled by other dealers. The court stated that it is reasonable to assume that a consumer who goes directly to Viking Gas might be more able to be aware that there is no connection between Viking Gas and Kosan Gas. Interestingly, the court also stated that 'as regards the fact that the composite bottles bear word and figurative marks made up of the name and logo of Kosan Gas which remain, according to the findings of the national court, visible in spite of the labelling affixed by Viking Gas to those bottles, it must be pointed out that this constitutes a relevant factor in so far as it seems to rule out that labelling from altering the condition of the bottles by masking their origin.'

[45] See fn. 42 from the perspective of Art 10 2 a. In the context of exhaustion, the previous case law on repacking pharmaceuticals has been based on the 'special rights constituting specific subject matter of trademark' test. In its case law, the court has developed rules on which forms of repacking and using a trademark can negatively impact either on how consumers perceive the origin referred to by the trademark, or on the trademark's reputation, and therefore can constitute a legitimate reason for a trademark owner to object the use of the trademark. See, eg, cases *Hoffmann-La Roche & Co. AG v. Centrafarm Vertriebsgesellschaft Pharmazeutischer Erzeugnisse mbH*., C-102/77, *Bristol-Myers Squibb v. Paranova A/S*, C-427/93 and *C H Boehringer Sohn, Boehringer Ingelheim KG and Boehringer Ingelheim A/S v. Paranova* A/S, C-429/93 and *Bayer Aktiengesellschaft and Bayer Danmark A/S v. Paranova A/S*, C-436/93, *Boehringer Ingelheim KG, et al v. Swingward Ltd*, C-143/00, *Boehringer Ingelheim KG et al .v. Swingward Ltd* et al. C-348/04.

[46] According to this limitation, it is permitted to use signs or indications which are not distinctive or which concern the kind, quality, quantity, intended purpose, value, geographical origin, the time of production of goods or of rendering the service, or other characteristics of goods or services; on condition that the use by a third party is in accordance with honest practises in industrial or commercial matters.

marketed. More specifically, the CJEU explicitly stated in *Adidas* that exploitation of a trademark in a purely decorative purpose does not amount to such use.[47] These strict interpretations do not give much room for trademark usage in connection of recycling. Division between usage of a) a trademark as a characteristic *itself* of a good offered by the recycling industry or b) a trademark as an *indication* of the characteristics of a product offered by the recycling industry is not easy or even feasible.[48]

Upcycling cases belong to a grey area. On one hand, trademarks serve as decorations that are very attractive for consumers. On the other hand, a trademark indicates the origin of raw-material and therefore, it might genuinely be perceived as an indication of recycling. In that case, use of the trademark could refer to recycling as a characteristic of a good. There is no certainty on how the CJEU would interpret these contradictory roles of trademark. The assessment is further complicated by the 'honest practices' requirement.

The ultimate problem lies in the way the limitations are formulated: the purpose of use covered by limitations is defined narrowly and the content of limitations fails to meet the interests of the circular economy. Innovative ways to utilize recycled products, such as manufacturing products by utilizing raw materials from completely different product categories, should be encouraged in this respect. For an environmentally-conscious consumer, an original trademark left affixed to such a product might serve as an important indication of the origin of its raw material. However, trademark law fails to recognise such interest. An additional difficulty might be unpredictability due to the very limited amount of case law in the recycling context in Europe.

3. Possible remedies

A general-level problem is fundamental: the basic structures of intellectual property rights do not offer enough support for sustainability. Since sustainability arguments are often intertwined with competition arguments, and since the fundamental aim of IPRs is to contribute to the welfare of society, there should not exist enormous difficulties in promoting sustainability by regulation of intellectual property rights. A strong property-right approach, however, hinders sustainability arguments, and a balance between sustainability and the interests of right owners requires sustainability to be embedded more explicitly into IPR regulation. In the IPR context, sustainability should serve as a general principle with limiting effects on IPRs, directing the incentives set by IPRs in a way that fosters sustainability and sustainable competition.

As such, the fact that the repair business must resort to exceptions and limitations is a structural problem that leads to sustainability being easily overridden by right holders' interests. The awareness of a need for comprehensive changes in consumption models should be reflected in weighing between sustainability and protection of property rights. In this assessment, sustainability cannot be seen as less valuable in society than protection of property rights. From that perspective, the best alternative would be to embed sustainability and the right to repair perspective directly in the provisions conferring exclusive rights as such. Exclusive rights should be formulated so that they are limited within the sustainable lifespan idea. This would mean that the scope of infringing acts should be re-defined in a way that only acts beyond the genuine purpose of maximising the lifespan of a product or material would be infringing acts.

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[47] See *Adam Opel v. Autec AG*, C-48/05; *Adidas AG et al v. Marca Mode CV*, C-102/07.

[48] For instance Kur criticizes the division between using a trademark as an element of a good or an element that indicates something on the good. A Kur, 'Small Cars, Big Problems? – An analysis of the ECJ´s Opel./.Autec Decision and its consequences', in A Bakardjieva Engelbrekt, U Bernitz, B Domeij, A Kur, PJ Nordell (eds): *Festskrift till Marianne Levin*. Norsteds Juridik, Stockholm 2008, 329–352, at 343.

In that case, property rights would be seen in a realistic way in relationship with planetary boundaries as enforced in the limits set by sustainability.

A second general problem is legal uncertainty as such as a remarkable risk for repair activities. In many areas of the repair business, there is no great profit expectation.[49] Therefore, risks of court proceedings are too great in relation to profit expectations. This in turn reduces incentives for the repairing business. The UPC will offer only limited harmonisation in many respects, and international harmonisation is needed for dismantling these barriers.

A first-aid solution, beyond correcting structural bias, might be to update Kohler's ideas to the era of the modern circular economy. In fact, it seems that Kohler's ideas as such are not problematic, but rather the way the 'normal lifespan' of a product is perceived in society. The problem is exacerbated by the civil law tradition of the courts' strong respect for the will of the legislator and a sceptical attitude towards court-made rules.[50] Therefore, the courts have a tendency to dogmatic and traditional viewpoints instead of opening their argumentation for issues beyond the traditional doctrinal basis.

The way that the public perceive a product's lifespan is crucial in assessing repairs in the patent context. General attitudes towards 'take, make, waste' consumption models as well as consumption models adopted by the circular economy all impact on this. However, patent holders' business models and marketing acts might have a fundamental impact. In case they have incentives to apply linear, short-term consumption models, consumers might see the lifespan of the product as short. Therefore, general attitudes in society towards sustainability are crucial.

One option would be to embed the incentive for the circular economy into the repair and reconstruction dichotomy by reassessing the 'normal lifespan of the product' idea. Instead of the 'normal lifespan', which is often perceived as following the 'take, make and waste' consumption models instead of including an obligation for sustainable lifespan, we could apply, for instance, a threshold of a 'normal, sustainable lifespan for that particular category of product', or an 'environmentally-friendly lifespan'.

This would mean a transformation from the idea of what the lifespan of a product to an idea of what it *should* be, that is, how long the product should work in a sustainable-based society. That would include, for instance, assessing the feasibility of selling changeable parts for such products. What kind of consequences would there be if such an approach were adopted? It would create incentives for the circular economy and sustainable products, but a drawback might be more uncertainty. To avoid this, more detailed guidelines for assessing sustainable lifespan should be adopted. However, the difficulty is that there must be a certain level of flexibility in thresholds relating to repair and reconstruction. Similarly to, for instance, the threshold of originality or innovative step, assessment must be dependent on circumstances and technology, for example. Therefore, a certain level of unpredictability is present since it is not possible to create detailed guidelines.

Harmonisation efforts should be taken under the idea of sustainable lifespan. Since international harmonisation might not be a realistic option as being arduous to achieve, a faster and more flexible mechanism could be to set the guidelines of sustainable lifespan by soft law mechanisms. For instance, guidelines could be set by WIPO recommendations.

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[49] Liu (n 1) 2014, 332.

[50] See more, eg, J Husa, K Nuotio and H Pihlajamäki, 'Nordic Law – Between Tradition and Dynamism', In (eds) J Husa, K Nuotio and H Pihlajamäki, *Nordic Law – Between Tradition and Dynamism*, Intersentia 2007, 1, 9.

A tendency to consider non-typical uses of a trademark where a trademark is perceived as something else as a badge or origin, as prima facie trademark infringements, reflects a strong property right perspective. A vice-versa assumption should be applied: in cases where the ultimate focus of trademark use is not on the badge of origin type of purpose and the use is considered feasible from the sustainable business model point of view, should be out of the scope of trademark rights. Flexibilities under the rules conferring rights (Article 10.2 a-c) should be used not only to adapt trademark rights to new use environments but also to foster innovative ways to recycle. After that, sustainable business would more easily avoid the traps of narrow interpretations offered by trademark exceptions and limitations. In principle, it would be relatively easy for the CJEU to revisit the interpretations of Article 10.2 a-c and genuinely put Article 11 of TFEU into effect in EU trademark law.

5. Conclusions

Genuine integration of sustainability into the IPR system would require a fundamental change in how the relationship is perceived between IPRs as property rights and interests relating, for instance, to the circular economy. As long as a possibility to radically extend the lifespan of patented products and their materials is perceived as an exception to a strong property right, sustainability does not serve as a strong argument. The same concerns creating attractive and innovative recycled products for consumers by utilising a raw-material's trademark as an indication of recycling, which might contribute to improving attitudes towards recycling.

A first aid type of solution to the two individual problems described in this Chapter would be to integrate the sustainable lifespan threshold into the exceptions and limitations, such as into the exhaustion doctrine. However, structural bias should primarily be corrected by formulating exclusive rights so that sustainable lifespan defines the scope of exclusive rights themselves. IPRs should cover only acts beyond those whose genuine purpose is to maximise the lifespan of a product or material. This might restrain perceiving sustainability only as an exception and would apply to all situations where IPRs and circular economy interests collide in the context of IPR infringements.